

STATEMENT OF WORK FOR REMEDIAL INVESTIGATION ADDENDUM and
FINAL FEASIBILITY STUDY
West Lake Landfill OU1

I. BACKGROUND INFORMATION

The West Lake Landfill Site (Site) is located in Bridgeton, Missouri. The U.S. Environmental Protection Agency (EPA) is the lead agency, and the Missouri Department of Natural Resources (MDNR) is the supporting state agency. The EPA ID Number is MOD079900932.

The Site was used agriculturally until a limestone quarrying and crushing operation began in 1939. The quarrying operation continued until 1988 and resulted in two quarry pits. Beginning in the early 1950s, portions of the quarried areas and adjacent areas were used for landfilling municipal refuse, industrial solid wastes, and construction/demolition debris. These operations were not subject to state permitting because they occurred prior to the formation of MDNR in 1974. Two landfill areas contain radiologically contaminated materials.

The Site is on a parcel of approximately 200 acres. It consists of the recently active Bridgeton Sanitary Landfill and several old inactive areas with sanitary and demolition fill. The Site is divided into two operable units (OUs). OU1 addresses two of the inactive landfill areas that are radiologically contaminated known as Area 1 and Area 2. The other landfill areas that are not impacted by radionuclide contaminants are addressed by OU2.

II. OBJECTIVE AND SCOPE

The Respondents and Federal Respondent shall perform the following tasks, as outlined further below.

- TASK I - Scoping Meeting
- TASK II - OU1 Remedial Investigation Addendum
 - Nature and Extent of RIM Contamination
 - Contaminant Extent, Fate and Transport
 - Baseline Risk Assessment
- TASK III - OU1 Final Feasibility Study

For Tasks II and III, this work shall build on information, evaluations and data collected prior to and as part of the Remedial Investigation (RI), Feasibility Study (FS), Supplemental Feasibility Study (SFS), and Record of Decision (ROD) and shall incorporate information, evaluations and data collected since the RI/FS, ROD and SFS were completed. In performance of Task IV, the Respondents and Federal Respondent shall utilize and build upon the October 2014 EPA-approved "Air Monitoring, Sampling

and QA/QC Plan.”

In performing this work the Respondents and Federal Respondent shall follow the National Contingency Plan, 40 CFR Part 300 and EPA guidance, including but not limited to the “Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA” (RI/FS Guidance), OSWER Directive 9355.3-01 (October 1988, or subsequently issued guidance); “Guidance for Data Useability in Risk Assessment”, OSWER Directive 9285.7-09A (April 1992); “Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination”, OSWER Directive 9200.4-18, (August 1997); “Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Remediation Goals under CERCLA”, OSWER Directive 9200.4-23, (August 1997); “Use of Soil Cleanup Criteria in 40 CFR Part 192 as Remediation Goals for CERCLA Sites”, OSWER Directive 9200.4-25 (February 1998); “Remediation Goals for Radioactively Contaminated CERCLA Sites Using the Benchmark Dose Cleanup Criteria in 10 CFR Part 40 Appendix A, I, Criterion 6(6)”, and OSWER Directive 9200.4-35P (April 2000).

TASK I – SCOPING MEETING

Respondents and Federal Respondent shall participate in a scoping meeting with EPA regarding Tasks II and III prior to the submission of the deliverables. The purpose of the scoping meeting is to develop a common understanding regarding the work to be performed under Tasks II and III described below. Respondents and Federal Respondent shall prepare an Abbreviated Work Plan covering both Tasks II and III. The Abbreviated Work Plan shall describe the work to be performed pursuant to this Statement of Work and will build upon previously approved work plans. Once approved by EPA this Work Plan will become a modification to the 1994 RI/FS Work Plan.

TASK II - OU1 REMEDIAL INVESTIGATION ADDENDUM

Respondents and Federal Respondent shall prepare a Remedial Investigation Addendum that reflects all new information and data collected at OU1 since 2008, including an updated conceptual site model. Specifically, the Respondents and Federal Respondent shall update the relevant portions of these sections of the 2000 RI Report:

Nature and extent of radiologically impacted material within OU1
Contaminant Fate and Transport
Baseline Risk Assessment

TASK III – OU1 FINAL FEASIBILITY STUDY

Respondents and Federal Respondent shall prepare and submit a Final Feasibility Study for OU1 (FFS). The FFS shall evaluate remedial alternatives to address the contamination at and/or originating from OU1. The FFS shall provide sufficient information to support EPA’s evaluation of the June 2008 Record of Decision for OU1. The FFS shall, at a minimum, consider the following alternatives:

1. Partial excavation of the contaminated soil that is at or near the surface that contributes to the greatest radiological dose to workers. Segregation and placement of non-impacted and impacted soil during the removal of the highest contaminated soil near the surface should be considered in these evaluations. Only off-site disposal of the excavated contaminated soils should be evaluated. Partial excavation alternatives shall include:
 - a. Partial excavation with a remediation goal of 1,000 pCi/g of combined radium (radium-226 plus radium-228) or combined thorium (thorium-230 plus thorium-232);
 - b. Partial excavation with a remediation goal of 52.9 pCi/g of combined radium (radium-226 plus radium-228) or combined thorium (thorium-230 plus thorium-232) down to a total depth of 16 foot beneath the 2005 topographic surface (Respondents and Federal Respondent have the ability to propose in the RIFS Work Plan a different depth to be used here); and
 - c. Other partial excavation scenarios and appropriate remediation goals given the reasonably anticipated land use of the Site.
2. Full excavation with off-site disposal of all RIM greater than 7.9 pCi/g of combined radium (radium-226 plus radium-228) or combined thorium (thorium-230 plus thorium-232).
3. Leaving all RIM in place on-site.
4. 2008 ROD Selected Remedy (Former Alternative L4).

The FFS shall be a comprehensive document, incorporating the elements of and updating as appropriate the June 2006 Feasibility Study Report and September 2011 Supplemental Feasibility Study. The FFS shall also include the information associated with and results of the following studies that have been or will be performed by Respondents and Federal Respondent since 2006 (including revisions made to these documents based upon EPA Comments):

- Supplemental Feasibility Study
- Discount Rates and Cost Estimates Evaluation
- Phase 1 RIM Investigation
- Area 1 and Area 2 Additional Characterization
- Alternate Cover Designs Evaluation
- Partial Excavation Alternatives
- Evaluation of the Use of Apatite/Phosphate Treatment Technology
- Evaluation of Possible Effects of a Tornado on Integrity of the ROD Selected Remedy
- Evaluation of Risks Associated with Subsurface Smoldering Events
- Radon Flux Calculations
- Bird Mitigation Analysis

**Note the work associated with the Fate and Transfer Study and Apatite Treatment Technology Evaluation will be considered and incorporated into a Groundwater Investigation which shall be addressed in a Statement of Work that will be transmitted to the parties under separate cover.*

In addition, the FFS shall also address the following specific items:

1. A thorough evaluation of the appropriateness of volume separation techniques and other physical and/or chemical treatment technologies as they relate to partial and full excavation alternatives.
2. As originally discussed in the Supplemental Feasibility Study, truck and other industrial injuries/fatalities are generally not environmental risks that should be considered in a short-term effectiveness analysis. For the FFS, the focus of this type of consideration should be on the extent to which accidents expose workers or the community to possible environmental releases resulting from such accidents and what mitigative measures can be implemented to reduce those risks.
3. Acknowledgement of any environmental justice concerns must be included in both the short-term and long-term effectiveness sections of the alternatives analysis.
4. Updated risk assessment tables are needed to reflect site data collected since the 2008 ROD and to accurately represent potential receptors and relevant exposure pathways. The risk assessment should also be revised to reflect EPA's most current toxicity values and exposure factors.
5. Long term effectiveness of the proposed caps/covers in addressing both humid region conditions and long-term shielding for RIM.
6. Long term effectiveness of cap/cover on potential migration of COCs to leachate and groundwater should be addressed in the Risk Assessment section.
7. In updating the ARARs discussion and tables in the FFS, additional detailed assessment of UMTRCA and RCRA Subtitle C landfill cover designs shall be included.
8. Discussion of Climate Change and vulnerabilities associated with extreme weather events shall be included when evaluating the long term effectiveness criteria.
9. The potential impacts of a Subsurface Smoldering Event in or near OU1 should be assessed in the short and long term effectiveness criteria.

III. SCHEDULE OF DELIVERABLES/MILESTONES

TASK	DELIVERABLE/MILESTONE	DUE DATE*
I	Scoping Meeting and Outline for Abbreviated Work Plan for Remedial Investigation Addendum and Final Feasibility Study	Scoping Meeting Held November 3, 2015 with Follow-Up Call on November 13, 2015. Outline submitted to EPA on December 1, 2015 and December 4, 2015.
I	Draft Abbreviated Work Plan for Remedial Investigation Addendum and Final Feasibility Study	December 18, 2015
II	Final Abbreviated Work Plan for Remedial Investigation Addendum and Final Feasibility Study	Within 10 days of receipt of EPA comments on the Draft Abbreviated Work Plan**
II	Draft Remedial Investigation Addendum	Within 120 days of receipt of validated data package from the Area 1/Area 2 Additional Characterization
II	Final Remedial Investigation Addendum	Within 21 days of receipt of EPA's comments on the Draft Remedial Investigation Addendum**
III	Draft Final Feasibility Study	Within 175 days of receipt of validated data package from the Area 1/Area 2 Additional Characterization
III	Final Feasibility Study	Within 30 days of receipt of EPA's comments on the Draft Final Feasibility Study**

* All days referenced in the schedule are calendar days.

**EPA may allow additional time for revisions and re-submittal if EPA deems appropriate in light of the number or complexity of its comments.